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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|---|-------------|----------------------|---------------------|------------------|
| 09/805,620 | 03/13/2001 | Craig M. Carpenter | MI22-1563 | 3004 |
| 21567 | 7590 | 12/06/2004 | EXAMINER | |
| WELLS ST. JOHN P.S. 601 W. FIRST AVENUE, SUITE 1300 SPOKANE, WA 99201 | | | FULLER, ERIC B | |
| | | | ART UNIT | PAPER NUMBER |
| | | | 1762 | |

DATE MAILED: 12/06/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/805,620

Applicant(s)

CARPENTER ET AL.

Examiner

Eric B Fuller

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 12 November 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 22-47 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 22-47 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 2
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date: _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on November 12, 2004 has been entered.

Claim Rejections - 35 USC § 112

The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claims 1-37 and 40-47 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claims contain subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventors, at the time the application was filed, had possession of the claimed invention. Specifically, it has been added that the purge gas is fed through a purge exit port into the deposition chamber. There is no support for this amendment. In paragraph 0039, page 13 of the specification, the applicant states that the purge gas enters chamber 36 through purge exit ports 22.

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According to the figures, exit ports 22 are located downstream from the substrate, thus deposition does not occur in the chamber that the purge exit ports feed purge gas into. Therefore, support does not exist for feeding the purge gas through a purge exit port into the deposition chamber.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 22-35 and 40-47 are rejected under 35 U.S.C. 102(e) as being anticipated by Ohashi et al. (US 6,059,885).

Ohashi teaches a CVD process where an annular, concentric purge curtain is fed into the chamber, around the periphery of the substrate and along the chamber walls, while the process gas is being injected over the substrate (column 18, lines 28-67). The curtain extends downward from above the substrate holder (figures 7 and 8). Figure 7 shows the purge curtain flowing past the substrate holder. The solid walls that make up the hollow annular portions (21, 829) of figures 6 and 8 read on being a flow diverter (column 17, lines 10-19). These walls partially extend into the chamber from the top (first wall, lid) of the chamber. In figure 10, the direction of the apertures (1048)

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read on not directing the purge gas towards the substrate and minimizing back flow.

The aspects of the lid are read on in the figures. The process prevents particles from adhering to the walls of the chamber by eliminating dead spaces by filling them with a purge curtain (column 2, lines 25-43). As the purge enters the section labeled "I" in figure 6, it goes through an inlet port and then exits this section through an exit port into the chamber. All other limitations may be found in column 18, lines 28-67, and figures 7 and 8.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 36-39 are rejected under 35 U.S.C. 103(a) as being unpatentable over DiMeo, Jr. et al. (US 6,972,430) in view of Ohashi et al. (US 6,059,885).

DiMeo teaches a digital CVD method that uses purge to eliminate process gases from the chamber between steps (column 5, lines 1-25). The reference is silent to using a purge curtain. However, Ohashi teaches that by providing a purge curtain, particles are prevented from adhering to, or removed from, the chamber walls (column 2, lines 25-40). It would have been obvious at the time the invention was made to a person having ordinary skill in the art to use a purge curtain, as taught by Ohashi, in the

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process taught by DiMeo. By doing so, particles are prevented from adhering to the walls of the chamber.

As to claim 37, Figures 1a-1d and figure 4, teach the flow profiles that should be used when only one gas is being supplied to the chamber.

As to claim 39, Ohashi teaches that the purge curtain prevents adhering of particles to the wall. One of skill would recognize that it would also remove particles that are all ready adhered to the wall. To minimize the amount of purge gas would have been obvious at the time the invention was made to a person having ordinary skill in the art. By doing so, less purge gas is required. To determine the amount of purge gas in the curtain for the purge and deposition steps, if any at all, would have been within the skill of one practicing in the art, through routine experimentation.

Response to Arguments

Applicant argues that Ohashi fails to teach a solid wall that extends into the chamber. Applicant argues that, in figure 8, the solid barrier wall must extend past the link section 828 to read on extending into the chamber. This is because the applicant is interpreting the chamber to not include the hollow annular portions (21, 829). This argument is not found convincing. Reference 61 explicitly points to the apparatus the reference considers a reactor (column 17, lines 5-10). The hollow space within the reactor is the deposition chamber. Although the chamber may be subdivided, this still reads on the applicant's claims. As the reference refers to areas 21 and 829 as "hollow annular portions", this implies that they are within the chamber and not part of the

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showerhead, as the applicant alleges. Figures 6 and 8 explicitly show solid walls that extend from the top of the hollow space within the reactor, or the chamber. The walls separate the purge gas from the process gas, and direct the flow of the purge gas to the dead spaces of the chamber (away from the substrate holder) and past the substrate, thus minimizing backflow. The walls that make up the annular hollow portions read on being flow directors. Since these walls read on being flow directors, are used to perform the same function as the flow directors claimed by the applicant, and extend from the same location that is claimed, they read on the walls of the applicant's claims.

Furthermore, in comparing the apparatus of figure 8 with the figures of the present invention, one of skill sees that the apparatus are functionally the same and perform the same method. The only difference is the presence of link 828, which the claims do not exclude. Applicant's arguments all rely on whether or not one considers the hollow portions 829 as being part of the chamber. These arguments are not found convincing because the same method and apparatus are taught and what one "considers" to be part of the chamber does not patentably distinguish an invention.

Applicant argues that the combination of DiMeo and Ohashi is improper hindsight, as no motivation is given outright that gleaned from the applicant's own specification. This argument is not found convincing. In response to applicant's argument that the examiner's conclusion of obviousness is based upon improper hindsight reasoning, it must be recognized that any judgment on obviousness is in a sense necessarily a reconstruction based upon hindsight reasoning. But so long as it takes into account only knowledge which was within the level of ordinary skill at the time

the claimed invention was made, and does not include knowledge gleaned only from the applicant's disclosure, such a reconstruction is proper. See *In re McLaughlin*, 443 F.2d 1392, 170 USPQ 209 (CCPA 1971). In the instant case, DiMeo teaches purging gas to remove reactants in between cycles. Ohashi teaches a method of removing the reactants from the walls of the reactor. The motivation to combine would be that the reactants would be removed from the walls of DiMeo, ensuring a more complete separation of process gases in DiMeo.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Eric B Fuller whose telephone number is (571) 272-1420. The examiner can normally be reached on Mondays through Thursdays.


If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Shrive P Beck, can be reached on (571) 272-1415. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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